

INSTRUCTIONS
AU300
UNIVERSAL AMPLIFIER

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UNIVERSAL AMPLIFIER

AU 300

GENERAL DESCRIPTION

Re: AU 300 Schematic B 300/2
 IRE Standard on Audio Systems and Components 56 IRE 3.S1
 IRE Standard on Audio Techniques 54 IRE 3.S1
 Standard on Electron Devices 53 IRE 7.S1
 RMA Standard TR 105 B.

The AU 300 was designed for broadcast applications as an answer to the increasing demand for:

1. Economical use of rack space.
2. Standardization of facilities.
3. Dependability.
4. Ease of Maintenance.

To 1: 8 amplifiers AU 300 fit side by side in the SA 10012-2 mounting frame. The frame is 4 rack units (7") high and fits into a RETMA standard equipment rack. The depth of the frame as measured from the mounting surface is 14".

The amplifiers plug-in from the front of the frame and present a flush closed appearance when in place. Blank panels are available in order to maintain this appearance when less than 8 amplifiers are installed. The plug is located at the rear of the amplifier chassis; the mating receptacle is provided on the mounting frame. A level control can be mounted in the frame immediately above the amplifier.

To 2: The AU 300 will deliver 24 dbm into loads of 150 or 600 ohms with a Transducer Gain adjustable between 48 and 68 db, working from sources of either 50, 150, 200 or 600 ohms. Any of the above conditions can be obtained by simple strappings on the mounting frame connector.

<u>Transducer Gain (db)</u>	<u>Resistance between pins 7 & 19 (ohms)</u>
68	0
64	4300
60	12000
57	24000
53	65000
50	220000
48	∞

The high gain of 68 db was chosen to provide amplification from mic to line level without cascading amplifiers. The lower gain was designed to provide a gain difference of 20 db between cascaded amplifiers to prevent accumulated noise levels. The input noise level is -128 dbm for high and -125 dbm for low gain, making the amplifiers suitable for all amplifier stages encountered in studio installations except speaker amplifiers, e.g.:

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GENERAL DESCRIPTION

A. The AU 300 as Preliminary Amplifier.

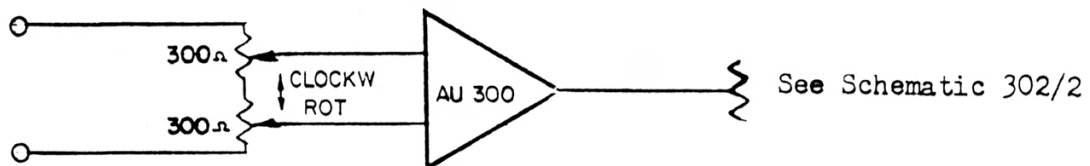
The input impedances of the AU 300 are complex but substantially higher than the corresponding source impedances. By this means the microphone is not loaded, a condition which is desirable, by making use of the maximum available power. A S/N Ratio of 78 db below 18 dbm for a -50 dbm microphone is thus obtained.

B. The AU 300 as Booster Amplifier.

Should it be necessary that the amplifier provides a matching resistive impedance to its source, a corresponding resistor should be placed across the input terminals, thus the Power Gain will be 6 db less than the adjusted Transducer Gain.

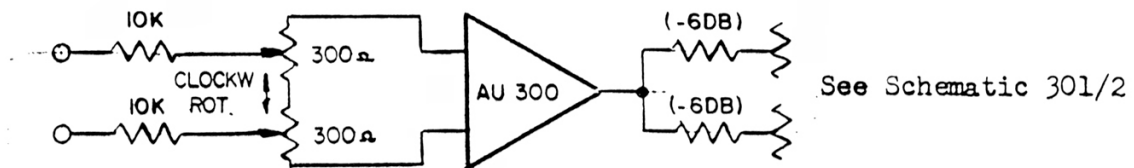
C. The AU 300 as Matching Line Amplifier.

Continuously variable matching gain is obtained by using the level control kit LCK-302 together with the AU 300 Amplifier strapped for 600 ohms source impedance and 48 db of gain. The LCK-302 is designed to provide a balanced and resistive impedance of 600 ohms to a line and can be mounted in the SA 10012-2 mounting frame immediately above the associated amplifier. The maximum matching gain is 42 db from a 600 ohm line. The S/N Ratio will be 101 db below 24 dbm.



D. The AU 300 as Bridging Line Amplifier.

Continuously variable bridging gain is obtained by using the level control kit LCK-301 together with the AU 300 Amplifier strapped for 600 ohms source impedance and 68 db of gain. The LCK-301 is designed to provide a balanced and resistive impedance of 20K ohms to a terminated line and can be mounted in the SA 10012-2 mounting frame immediately above the associated amplifier. The maximum bridging gain is 32 db when bridged across 600 ohms and can be increased by lowering the bridging impedance. The S/N Ratio will be 84 db below 24 dbm.



The low output impedance of the AU 300 allows the use of a 6 db, two-way splitter pad with 25 db isolation between branches.

All pads associated with the input and/or output of an amplifier can be mounted on the provided terminal board at the rear of the SA 10012-2 mounting frame.

It should be noted here once again that in studio systems using the AU 300 for all amplifier stages, it is possible to interchange any one amplifier with any other unit since the control, input and output strapping, pads, etc. remain in the frame and consequently in the systems wiring.

UNIVERSAL AMPLIFIER

AU 300

GENERAL DESCRIPTION

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To 3: Dependability is achieved by use of high quality components and by the absence of electrolytic capacitors. The effect of tube characteristic variations is minimized by employing 23 db to 43 db of combined voltage and current feed back depending on gain adjustment. The connector is a Blue Ribbon type with gold plated contacts. A regulated power supply such as PS 860 should be used.

To 4: Easy maintenance and maximum quality of service work is ensured. The repair time in an emergency is no longer of consequence, since a tested, preheated amplifier will replace a faulty one. The faulty unit is then serviced in a special maintenance frame, which allows easy access to all components with the amplifier under test conditions.

AU300 TEST PROCEDURE

DWG. IP. 300

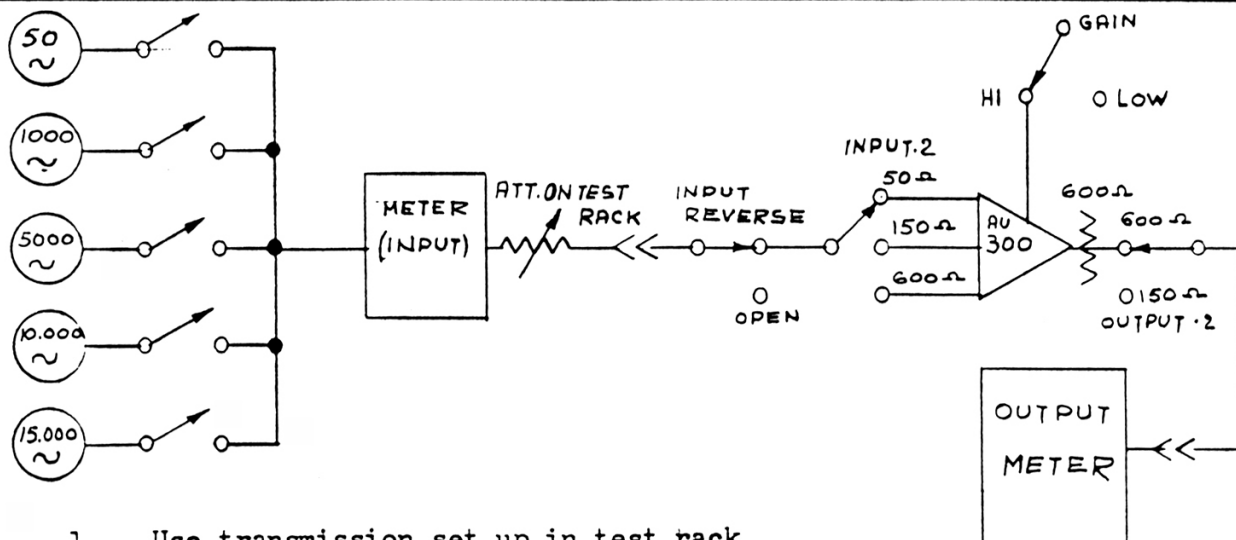
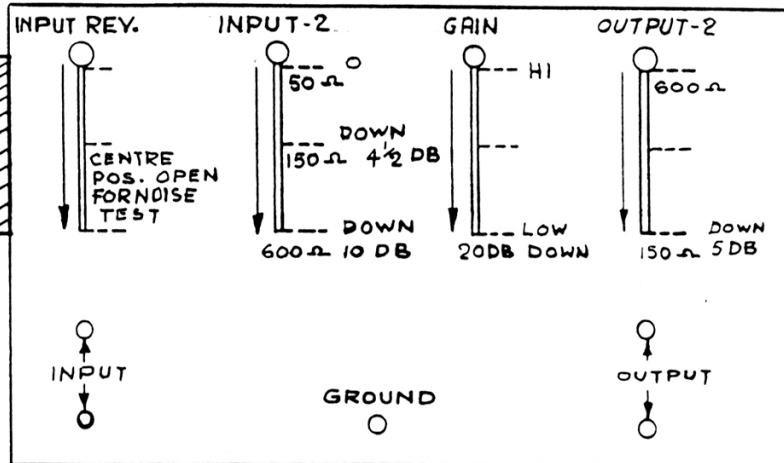
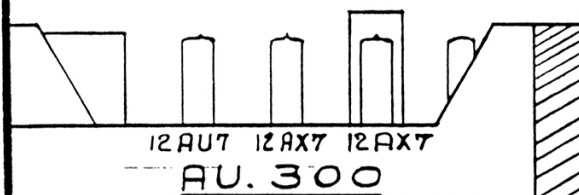
SHEET: 1 of 2

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ENG. R.C. APP.

AU-300 TEST PROCEDURE

Test schematic and functional of transmission set shown in lab test equipment Book #2.



1. Use transmission set up in test rack.
2. Connect test cables from IN and OUT of AU-300 to Jacks marked "Amp under test" on jackfield of test panel.
3. Connect ground to centre AU-300 test frame post.
4. Set up attenuators
 - (a) Input dbm - 6
 - (b) 600 ohm Gen - 6
 - (c) Attenuators
 - 1st - 40
 - 2nd 4
 - 3rd 0
 - (d) Impedance 50 ohm
 - (e) Ohms 600

(con't.)

AU 300 TEST PROCEDURE

DWG. TP 300

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DATE: June 22/61 ISS

ENG. R.C. APP

4. Set up attenuators (con't.)

(f) Output DBM 24
(g) Output loading OFF

5. Plug-in AU-300, both meters should read zero

NOTE: Output meter will deviate slightly due to gain of AU-300. Use attenuators to adjust gain. should be within -1 dbm.

6. Gain 68.dbm $\pm$ 1 dbm (attenuators read 24.0)7. Response. $\pm$ 1 dbm. (a) set up each individual osc. to read zero on input meter. Punch each button and note response.

8. Switch input reverse switch, reading should be same in both positions.

9. Switch input impedance-switch; Pos 50 ohm 0 dbm
150 ohm -4 $\frac{1}{2}$ dbm
600 ohm -10 dbm

return to normal position.

10. Switch gain from HI to LOW; Gain drops 20 dbm.

11. Switch output switch to 150 ohm; gain drops 20 dbm.

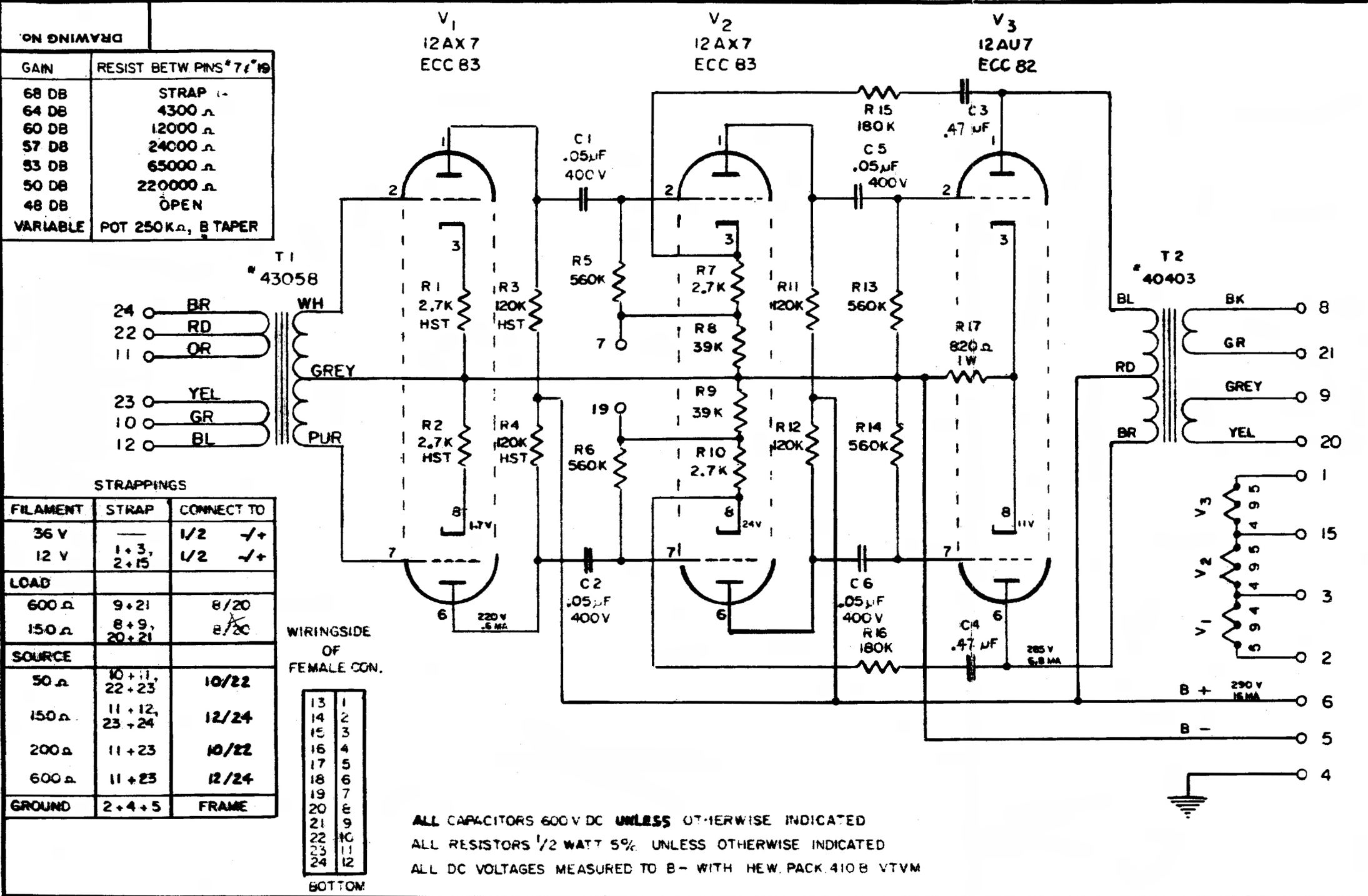
12. Distortion: (a) Connect 206A to IN of test frame.
(b) Connect 330B to OUT of test frame. use scope on 330B
(c) Input -44 in 50 ohm (use 10 db 50 ohm pad)
(d) OUT + 24 dbm 600 ohm.
(e) Check distortion 50 cycle 1000 cycle 15 KC should be less than 1% usually less than .5%.

13. Noise: set level using 1000-cy +24 out, move input reverse switch to centre position. This automatically disconnects input signal and terminates AU-300 input. Noise should be -84 dbm or better.

14. Check for microphonics and instability while reading noise.

COMMON ERRORS

1. High gain -R7, R8, R9, R10, R5, or R6 shorted together or to chassis.
2. Square Wave - Feedback wires switched between V2 A & B.
3. High noise - V1 defective.
Violent flicks. plate resistors of V1 noisy.



SPECIFICATIONS

All terms used below comply with those defined in the following Standards:
56 IRE 3.S1, Gain, Amplification, Loss, Attenuation and Frequency Response.
54 IRE 3.S1, Definition of Terms.
53 IRE 7.S1, Methods of Measuring Noise.
RETNMA TR 105 B, Audio Tests.
RE: Technical Bulletin TB 300.

Input:
Input Impedance: Balanced, substantially higher than source impedance, selectable to work from the following:
Source Impedance: 50, 150, 200 or 600 ohms.
Input Level : -18 dbm. max.

Output:
Output Impedance: Balanced, 22 ohms or 90 ohms selectable to work into the following:
Load Impedance : 150 or 600 ohms
Output Level : 24 dbm max.

Transducer Gain : Adjustable bet. 48 & 68 db.

Noise: At High Gain : Input Noise Level -128 dbm
Output Noise Level -60 dbm
S/N: 84 db below 24 dbm.
At Low Gain : Input Noise Level -125 dbm
Output Noise Level -77 dbm
S/N: 101 db below 24 dbm

Frequency Response : Between ± 1 db from 50 to 15000 c/s.

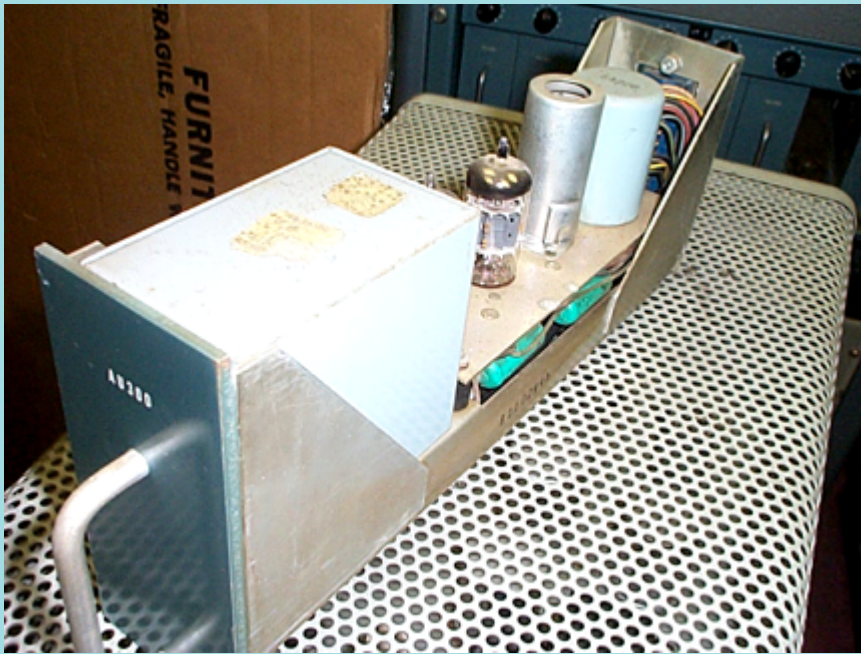
Distortion: Harmonic: Less than 1% from 50 to 15000 c/s at 24 dbm.

Intermodulation: 60 c/s & 12000 c/s, 1:1 Ratio, less than 2% at 24 dbm.

Physical: w 2", H 4 1/4", L 10", wt. 4 lbs.

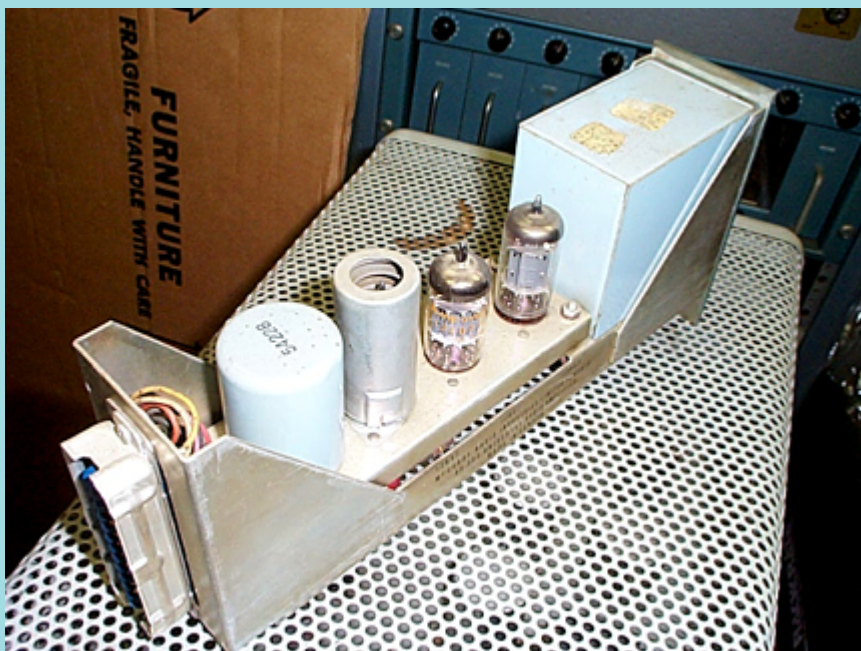
Power Requirements: Fil. 450 MA at 12.6V DC or 150 MA at 37.8V DC
B+: 16 MA at 290 V DC
For Grounding see Strapping Instructions.

ISSUE	3	4	5	6	TOLERANCES UNLESS OTHERWISE SPECIFIED	DECIMAL $\pm .005$ FRACTIONAL $\pm 1/64$ ANGULAR $\pm 1/2^\circ$	WORK ORDER— 2747	PROJECT—	ITEM	DWG. No.	DESCRIPTION	QTY.
APRIL 24 1957 REDRAWN 11.6.57							DESIGN— E. Blum	SCALE—			McCURDY RADIO INDUSTRIES LIMITED TORONTO—ONTARIO	UNIVERSAL AUDIO AMPLIFIER AU 300 SCHEMATIC
MAY 29 1957 GAIN RESISTORS ADDED GROUND WAS 3+4+5							DRAWN—	DATE— APRIL 24 1957				
MARCH 4-58 T1 NUMBER WAS 38754 THIS CHANGE IN EFFECT AS OF SERIAL #712151 UP							CHECKED—	ASSEM. DWG.—				
DEC. 27 1961 C3 AND C4 WAS .25 MFD							APPROVED—	NO. REQ.—				
							FOR—				UNIT— AU 300	DRAWING No. B 300/2



McCurdy AU-300 Universal Amplifier

**68 dB
Max.
Gain**



**Plug-in
Operation**



McCurdy AU-300 Universal Amplifier

